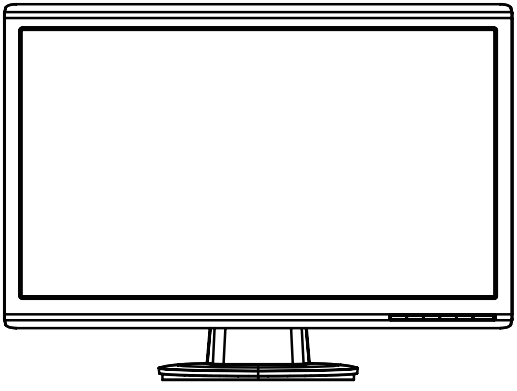
January 2011

VH228 Series
LED Monitor

User Guide



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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

As an Energy Star® Partner, our company has determined that this product meets the Energy Star® guidelines for energy efficiency.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Energy Saving on Monitor

ASUS monitor supports energy saving mode. If the monitor does not detect the Horizontal sync signal and/or Vertical sync signal, it will enter energy saving (standby) mode.

When the monitor enters energy saving (standby) mode, the screen will display blank and the backlight will be turned off, and the Power LED will light “amber”.

For the indication of Energy Saving (standby) mode, please refer to your user guide.

Safety information

- Before setting up the monitor, carefully read all the documentation that came with the package.
- To prevent fire or shock hazard, never expose the monitor to rain or moisture.
- Never try to open the monitor cabinet. The dangerous high voltages inside the monitor may result in serious physical injury.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- Slots and openings on the back or top of the cabinet are provided for ventilation. Do not block these slots. Never place this product near or over a radiator or heat source unless proper ventilation is provided.
- The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
- Use the appropriate power plug which complies with your local power standard.
- Do not overload power strips and extension cords. Overloading can result in fire or electric shock.
- Avoid dust, humidity, and temperature extremes. Do not place the monitor in any area where it may become wet. Place the monitor on a stable surface.
- Unplug the unit during a lightning storm or if it will not be used for a long period of time. This will protect the monitor from damage due to power surges.
- Never push objects or spill liquid of any kind into the slots on the monitor cabinet.
- To ensure satisfactory operation, use the monitor only with UL listed computers which have appropriate configured receptacles marked between 100-240V AC.
- If you encounter technical problems with the monitor, contact a qualified service technician or your retailer.

Care & Cleaning

- Before you lift or reposition your monitor, it is better to disconnect the cables and power cord. Follow the correct lifting techniques when positioning the monitor. When lifting or carrying the monitor, grasp the edges of the monitor. Do not lift the display by the stand or the cord.
- Cleaning. Turn your monitor off and unplug the power cord. Clean the monitor surface with a lint-free, non-abrasive cloth. Stubborn stains may be removed with a cloth dampened with mild cleaner.
- Avoid using a cleaner containing alcohol or acetone. Use a cleaner intended for use with the LED. Never spray cleaner directly on the screen, as it may drip inside the monitor and cause an electric shock.

The following symptoms are normal with the monitor:

- The screen may flicker during the initial use due to the nature of the fluorescent light. Turn off the Power Switch and turn it on again to make sure that the flicker disappears.
- You may find slightly uneven brightness on the screen depending on the desktop pattern you use.
- When the same image is displayed for hours, an afterimage of the previous screen may remain after switching the image. The screen will recover slowly or you can turn off the Power Switch for hours.
- When the screen becomes black or flashes, or cannot work anymore, contact your dealer or service center to fix it. Do not repair the screen by yourself!

Conventions used in this guide

WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Information that you MUST follow to complete a task.

NOTE: Tips and additional information to aid in completing a task.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS websites worldwide provide updated information on ASUS hardware and software products. Refer to **http://www.asus.com.**

2. **Optional documentation**

   Your product package may include optional documentation that may have been added by your dealer. These documents are not part of the standard package.

1.1 Welcome!

Thank you for purchasing the ASUS® VH228 Series LED monitor!

The latest widescreen LED monitor from ASUS provides a crisper, broader, and brighter display, plus a host of features that enhance your viewing experience.

With these features, you can enjoy the convenience and delightful visual experience that the VH228 Series brings you!

1.2 Package contents

Check your VH228 Series LED package for the following items:

- ✓ LED monitor
- ✓ Monitor stand and base
- ✓ Quick Start Guide
- ✓ Power cord
- ✓ VGA cable
- ✓ DVI cable (VH228H/T/N)
- ✓ Audio cable (VH228H/T/S)

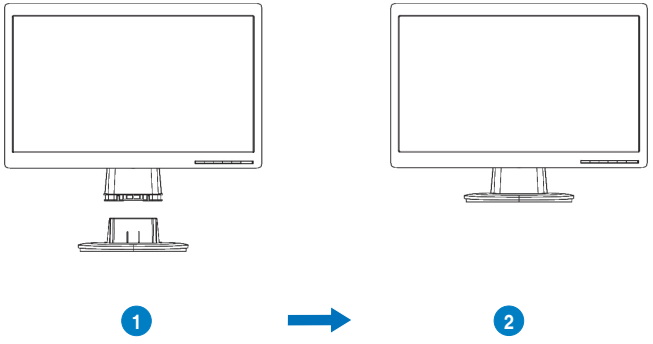
If any of the above items is damaged or missing, contact your retailer immediately.

1.3 Assembling the monitor base

To assemble the monitor base:

1. Connect the base with the monitor. A click indicates that the base has been connected successfully.
2. Adjust the monitor to the angle that is most comfortable for you.

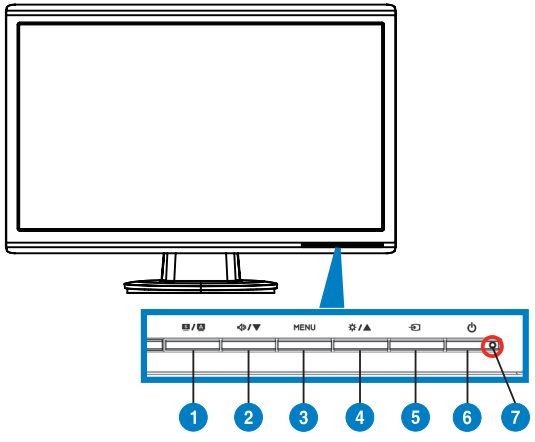
We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.



1.4 Monitor introduction

1.4.1 Front of the LED monitor

1.4.1.1 VH228H/T



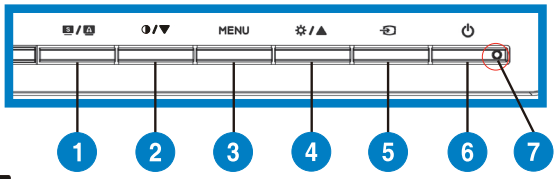
1. S / A Button:
   - Automatically adjust the image to its optimized position, clock, and phase by long pressing this button for 2-4 seconds (for VGA mode only).
   - Use this hotkey to switch from six video preset modes (Scenery Mode, Standard Mode, Theater Mode, Game Mode, Night View Mode, and sRGB Mode) with SPLENDID™ Video Intelligence Technology.
   - Exit the OSD menu or go back to the previous menu as the OSD menu is active.
2. / ▼ Button:
   - Press this button to decrease the value of the function selected or move to the next function.
   - This is also a hotkey for Volume adjustment.
3. MENU Button:
   - Press this button to enter/select the icon (function) highlighted while the OSD menu is activated.
4. / ▲ Button:
   - Press this button to increase the value of the function selected or move to the previous function.
   - This is also a hotkey for Brightness adjustment.
5. Input Select Button:
   - Use this hotkey to switch from VGA, DVI, HDMI input signals.(for VH228H)

Press (Input Select button) to display HDMI signal after you connect cable with the monitor.(for VH228H)

6. Power Button:
   - Press this button to turn the monitor on/off.
7. Power Indicator:

Status	Description
Blue	ON
Amber	Standby mode
OFF	OFF

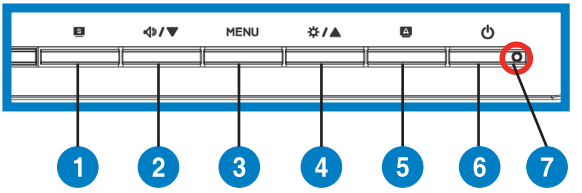
1.4.1.2 VH228N



1. S / A Button:
   - Automatically adjust the image to its optimized position, clock, and phase by long pressing this button for 2-4 seconds (for VGA mode only).
   - Use this hotkey to switch from six video preset modes (Scenery Mode, Standard Mode, Theater Mode, Game Mode, Night View Mode, and sRGB Mode) with SPLENDID™ Video Intelligence Technology.
   - Exit the OSD menu or go back to the previous menu as the OSD menu is active.
2. ◑ / ▼ Button:
   - Press this button to decrease the value of the function selected or move to the next function.
   - This is also a hotkey for Contrast adjustment.
3. MENU Button:
   - Press this button to enter/select the icon (function) highlighted while the OSD menu is activated.
4. ☼ / ▲ Button:
   - Press this button to increase the value of the function selected or move to the previous function.
   - This is also a hotkey for Brightness adjustment.
5. Input Select Button:
   - Use this hotkey to switch from VGA, DVI input signals.
6. Power Button:
   - Press this button to turn the monitor on/off.
7. Power Indicator:

Status	Description
Blue	ON
Amber	Standby mode
OFF	OFF

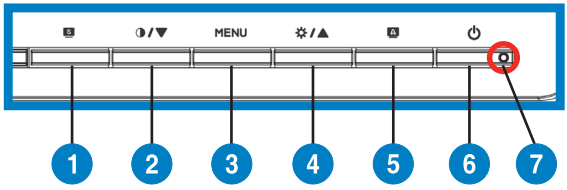
1.4.1.3 VH228S



1. S Button:
   - Use this hotkey to switch from six video preset modes (Scenery Mode, Standard Mode, Theater Mode, Game Mode, Night View Mode, and sRGB Mode) with SPLENDID™ Video Intelligence Technology.
   - Exit the OSD menu or go back to the previous menu as the OSD menu is active.
2. ◀/▼ Button:
   - Press this button to decrease the value of the function selected or move to the next function.
   - This is also a hotkey for Volume adjustment.
3. MENU Button:
   - Press this button to enter/select the icon (function) highlighted while the OSD menu is activated.
4. ☼/▲ Button:
   - Press this button to increase the value of the function selected or move to the previous function.
   - This is also a hotkey for Brightness adjustment.
5. A Button:
   - Automatically adjust the image to its optimized position, clock, and phase.
6. ⏻ Power Button:
   - Press this button to turn the monitor on/off.
7. Power Indicator:

Status	Description
Blue	ON
Amber	Standby mode
OFF	OFF

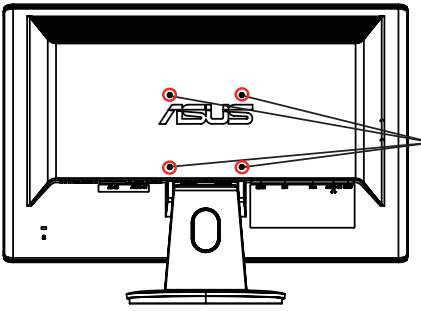
1.4.1.4 VH228D



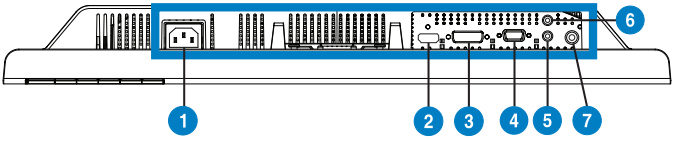
1. S Button:
   - Use this hotkey to switch from six video preset modes (Scenery Mode, Standard Mode, Theater Mode, Game Mode, Night View Mode, and sRGB Mode) with SPLENDID™ Video Intelligence Technology.
   - Exit the OSD menu or go back to the previous menu as the OSD menu is active.
2. ◑/▼ Button:
   - Press this button to decrease the value of the function selected or move to the next function.
   - This is also a hotkey for Contrast adjustment.
3. MENU Button:
   - Press this button to enter/select the icon (function) highlighted while the OSD menu is activated.
4. ☼/▲ Button:
   - Press this button to increase the value of the function selected or move to the previous function.
   - This is also a hotkey for Brightness adjustment.
5. A Button:
   - Automatically adjust the image to its optimized position, clock, and phase.
6. ⏻ Power Button:
   - Press this button to turn the monitor on/off.
7. Power Indicator:

Status	Description
Blue	ON
Amber	Standby mode
OFF	OFF

1.4.2 Rear of the LED monitor

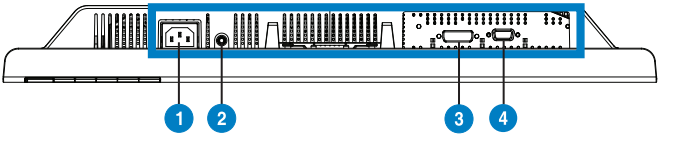


1.4.2.1 VH228H



1	AC-IN port
2	HDMI-IN port
3	DVI port
4	VGA port
5	Line-in port
6	Earphone-out port
7	HDMI SPDIF OUT

1.4.2.2 VH228T/N/S/D



1	AC-IN port
2	Line-in port(VH228T/S)
3	DVI port(VH228T/N)
4	VGA port

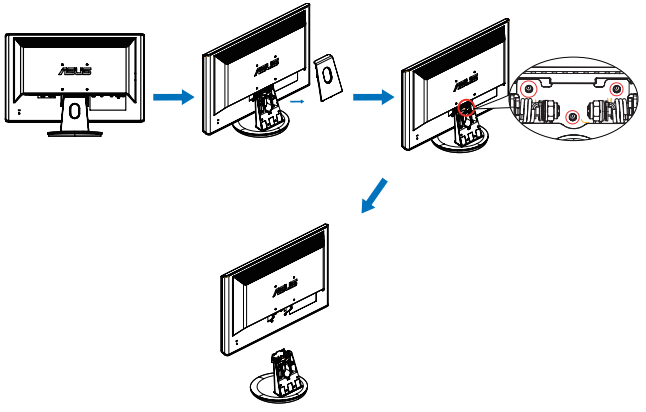
2.1 Detaching the arm/stand (for VESA wall mount)

The detachable stand of the VH228 Series LED monitor is specially designed for VESA wall mount.

To detach the arm/stand:

1. Remove the arm cover.
2. Have the front of the monitor face down on a table.
3. Use a screwdriver to remove the three screws on the stand of the monitor as the below drawing shows.
4. Detach the arm from the monitor.

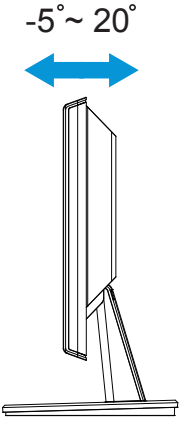
- We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.
- Hold the stand of the monitor when you remove the screws.



- The VESA wall mount kit (100 x 100 mm) is purchased separately.
- Use only the UL Listed Wall Mount Bracket with minimum weight/load 20 Kg (Screw size: M4 x 12 mm).

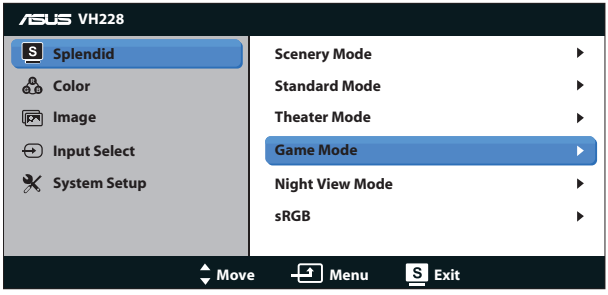
2.2 Adjusting the monitor

- For optimal viewing, we recommend that you look at the full face of the monitor, then adjust the monitor to the angle that is most comfortable for you.
- Hold the stand to prevent the monitor from falling while changing its angle.
- You can adjust the monitor's angle from -5˚ to 20˚.



3.1 OSD (On-Screen Display) menu

3.1.1 How to reconfigure

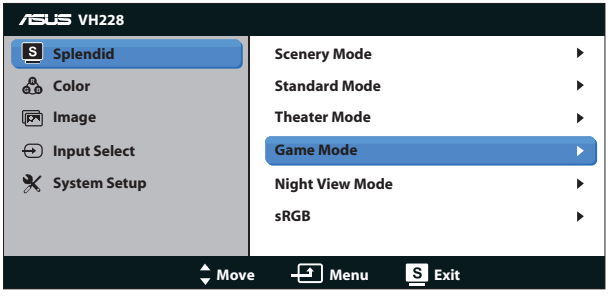


1. Press the MENU button to activate the OSD menu.
2. Press ▼ and ▲ to navigate through the functions. Highlight and activate the desired function by pressing the MENU button. If the function selected has a sub-menu, press ▼ and ▲ again to navigate through the sub-menu functions. Highlight and activate the desired sub-menu function by pressing the MENU button.
3. Press ▼ and ▲ to change the settings of the selected function.
4. To exit the OSD menu, press the S button. Repeat step 2 and step 3 to adjust any other function.

3.1.2 OSD Function Introduction

1. Splendid

This function contains six sub-functions that you can select for your preference. Each mode has the Reset selection, allowing you to maintain your setting or return to the preset mode.



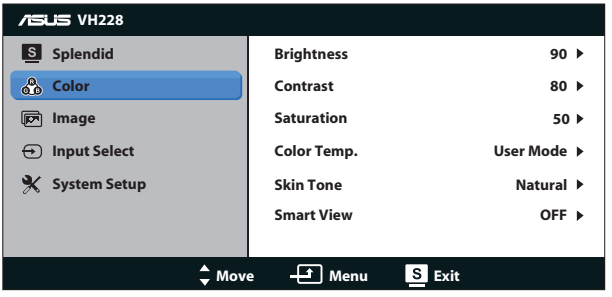
- **Scenery Mode**: This is the best choice for scenery photo displaying with SPLENDID™ Video Intelligence Technology.

- **Standard Mode**: This is the best choice for document editing with SPLENDID™ Video Intelligence Technology.
- **Theater Mode**: This is the best choice for movie watching with SPLENDID™ Video Intelligence Technology.
- **Game Mode**: This is the best choice for game playing with SPLENDID™ Video Intelligence Technology.
- **Night View Mode**: This is the best choice for playing dark-scene game or watching dark-scene movie with SPLENDID™ Video Intelligence Technology.
- **sRGB**

- In the Standard Mode, the Saturation, Color Temp., SkinTone, Sharpness, and ASCR functions are not user-configurable.
- In the sRGB, the Saturation, Color Temp., SkinTone, Sharpness, Brightness, Contrast and ASCR functions are not user-configurable.

2. Color

Select the image color you like from this function.

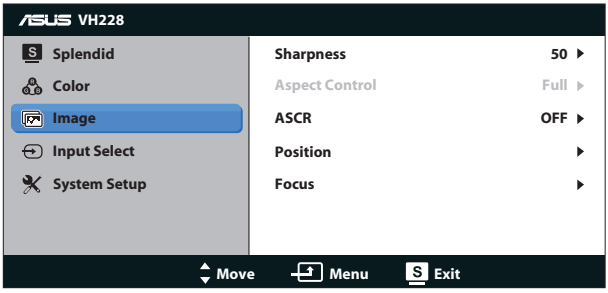


- **Brightness**: The adjusting range is from 0 to 100. The ☼/▲ button is also a hotkey to activate this function.
- **Contrast**: The adjusting range is from 0 to 100.
- **Saturation**: The adjusting range is from 0 to 100.
- **Color Temp.**: Contain three preset color modes (Cool, Normal, Warm) and one User Mode.
- **Skin Tone**: Contain three color modes including Reddish, Natural, and Yellowish.
- **Smart view**: The versatile viewing positions with Smart View Technology.

In the User Mode, colors of R (Red), G (Green), and B (Blue) are userconfigurable; the adjusting range is from 0 ~ 100.

3. Image

You can adjust the image Sharpness, Aspect Control, ASCR, Position (VGA only), and Focus (VGA only) from this main function.

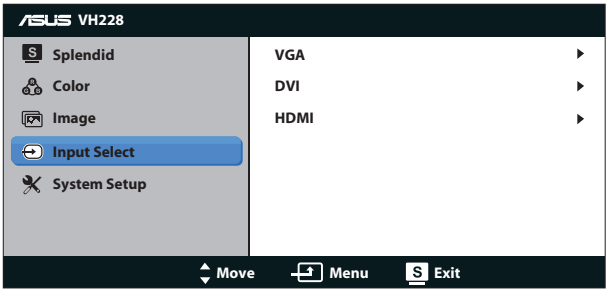


- **Sharpness**: Adjust the picture sharpness. The adjusting range is from 0 to 100.
- **Aspect Control**: Adjust the aspect ratio to "Full", "4:3", or "Over Scan" (Only available for HDMI input).
- **ASCR**: Select ON or OFF to enable or disable dynamic contrast ratio function.
- **Position**: Adjust the horizontal position (H-Position) and the vertical position (V-Position) of the image. The adjusting range is from 0 to 100 (Only available for VGA input).
- **Focus**: Reduce Horizonal-line noise and Vertical-line noise of the image by adjusting (Phase) and (Clock) separately. The adjusting range is from 0 to 100 (Only available for VGA input).

- Phase adjusts the phase of the pixel clock signal. With a wrong phase adjustment, the screen shows horizontal disturbances.
- Clock (pixel frequency) controls the number of pixels scanned by one horizontal sweep. If the frequency is not correct, the screen shows vertical stripes and the image is not proportional.

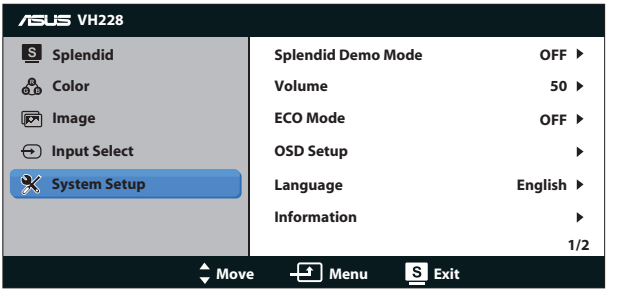
4. Input Select

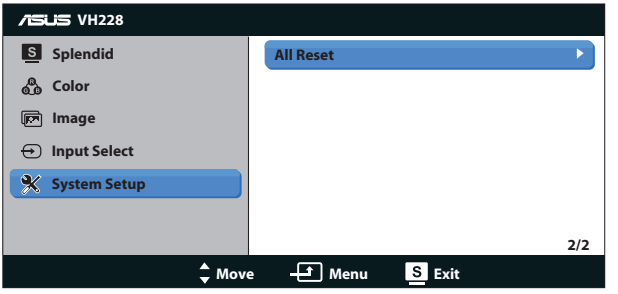
Select the input source from **VGA**, **DVI**, or **HDMI** ("**DVI**" for **VH228H/T/N** only,"**HDMI**" for **VH228H** only).



5. System Setup

Adjust the system configuration.





- **Splendid Demo Mode**: Activate the demo mode for the Splendid function.
- **Volume:** The adjusting range is from 0 to 100. is a hotkey to activate this function.
- **ECO Mode**: Power-saving mode.
- **OSD Setup**: Adjust the horizontal position (H-Position),and the vertical position (V-Position) of the OSD. The adjusting range is from 0 to 100. In the OSD Timeout selection, you can adjust the OSD timeout from 10 to 120.
- **Language**: There are eleven languages for your selection,including English, German, Italian, French, Dutch, Spanish, Russian,Traditional Chinese, Simplified Chinese, Japanese, and Korean.
- **Information**: Display the monitor information.
- **All Reset**: Select “Yes” to revert all settings to the factory default mode.

3.2 Specifications summary

Model	VH228H	VH228T	VH228N	VH228S	VH228D
Panel Size	21.5"W (54.7 cm)				
True Resolution	1920x1080 (Full HD)				
Brightness (Typ.)	250 cd/m^2				
Contrast Ratio (Typ.)	1000:1				
ASUS Smart Contrast Ratio (ASCR)	50,000,000:1				
Viewing Angle (CR ≥ 10)	170°(H)/160°(V)				
Color Saturation (NTSC)	72%				
Display Colors	16.7 M				
Response Time	5ms (On/Off)				
Power Consumption	ON Mode: <55W, Standby Mode: <1W, Off Mode: <1W				
Stereo Speaker	2W x 2 RMS	2W x 2 RMS	--	2W x 2 RMS	--
HDMI input	Yes	--	--	--	--
DVI input	Yes	Yes	Yes	--	--
D-Sub input	Yes	Yes	Yes	Yes	Yes
Audio Line-in	Yes	Yes	--	Yes	--
Earphone Output	Yes	--	--	--	--
SPIDIF output	Yes	--	--	--	--
Voltage Rating	AC 100-240V				
Tilt	-5° ~ +20°				
VESA Wall Mounting	100x100 mm				
Phys. Dimension (WxHxD)	515(W)x400(H)x220(D)mm				
Box Dimension (WxHxD)	588(W)x452(H)x162(D)mm				

***Specifications are subject to change without notice.**

3.3 Troubleshooting (FAQ)

Problem	Possible Solution
Power LED is not ON	• Press the ⏻ button to check if the monitor is in the ON mode. • Check if the power cord is properly connected to the monitor and the power outlet.
The power LED lights amber and there is no screen image	• Check if the monitor and the computer are in the ON mode. • Make sure the signal cable is properly connected the monitor and the computer. • Inspect the signal cable and make sure none of the pins are bent. • Connect the computer with another available monitor to check if the computer is properly working.
Screen image is too light or dark	• Adjust the Contrast and Brightness settings via OSD.
Screen image is not centered or sized properly	• Press the A button for 2~4 seconds to automatically adjust the image (for VGA input only). • Adjust the H-Position or V-Position settings via OSD (for VGA input only).
Screen image bounces or a wave pattern is present in the image	• Make sure the signal cable is properly connected to the monitor and the computer. • Move electrical devices that may cause electrical interference.
Screen image has color defects (white does not look white)	• Inspect the signal cable and make sure that none of the pins are bent. • Perform All Reset via OSD. • Adjust the R/G/B color settings or select the Color Temperature via OSD.
Screen image is blurry or fuzzy	• Press the A button for 2~4 seconds to automatically adjust the image (for VGA input only). • Adjust the Phase and Clock settings via OSD.
No sound or sound is low (VH228H/T/S)	• Ensure that the audio cable is properly connected to the monitor and the computer. • Adjust the volume settings of both your monitor and computer. • Ensure that the computer sound card driver is properly installed and activated.

3.4 Supported Timing List

Resolution	Refresh Rate	Horizontal Frequency
640x480	60Hz	31.469 kHz
640x480	72Hz	37.861 kHz
640x480	75Hz	37.5 kHz
640x480	67Hz	35 kHz
640x350	70Hz	31.469 kHz
720x400	70Hz	31.469 kHz
800x600	56Hz	35.156 kHz
800x600	60Hz	37.879 kHz
800x600	72Hz	48.077 kHz
800x600	75Hz	46.875 kHz
832x624	75Hz	49.725 kHz
848x480	60Hz	31.02 kHz
1024x768	60Hz	48.363 kHz
1024x768	70Hz	56.476 kHz
1024x768	75Hz	60.023 kHz
1152x864	75Hz	67.5 kHz
1280x720	60Hz	44.772 kHz
1280x800	60Hz	49.702kHz
1280x960	60Hz	60 kHz
1280x1024	60Hz	63.981 kHz
1280x1024	75Hz	79.976 kHz
1366x768	60Hz	47.712kHz
1440x900	60Hz	55.935 kHz
1680x1050	60Hz	65.29 kHz
1680x1050	60Hz	64.674 kHz
1920x1080	60Hz	67.5 kHz
1920x1080	60Hz	66.587 kHz
1280x720	60Hz	44.444kHz
1280x720	75Hz	56.456kHz
1280x800	60Hz	49.306kHz
1280x800	75Hz	62.795kHz
1440x900	60Hz	55.469kHz
1440x900	75Hz	70.635kHz
640x480P(HDMI)	59.94/60Hz	31.469/31.5 kHz
720x480P(HDMI)	59.94/60Hz	31.469 / 31.5 kHz
720x576P(HDMI)	50Hz	31.25 kHz
1280x720P(HDMI)	50Hz	37.5 kHz
1280x720P(HDMI)	59.94/60Hz	44.955/45 kHz
1440x480P(HDMI)	59.94/ 60 Hz	31.469/ 31.5 kHz
1440x576P (HDMI)	50Hz	31.25 kHz
1920x1080i(HDMI)	50Hz	31.25 kHz
1920x1080i(HDMI)	50Hz	28.125kHz
1920x1080i(HDMI)	59.94/60Hz	33.716/33.75 kHz
1920x1080P(HDMI)	50Hz	56.25 kHz
1920x1080P(HDMI)	59.94/60Hz	67.433/67.5 kHz

*** The modes not listed in the above tables may not be supported. For optimal resolution, we recommend that you choose a mode listed in the above tables.**